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# EDUCATION AND DEVELOPMENT
A Review

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T hat education is a form of investment that can contribute to individual and social development is not a novel idea. Over two centuries ago Adam Smith wrote:

> A man educated at the expense of much labor and time. . . may be compared to one. . . expensive machine. . . The work which he learns to perform. . . over and above the usual wages of common labor will replace the whole expense of his education (1776, p. 101).

Articles on education as investment appeared sporadically in the first half of this century (for example, Strumilin 1929, Walsh 1935). But it was not until the late 1950s that the subject became a separate field of study—the economics of education. The spur was the realization that not all the increases in national output could be accounted for by the growth of conventional inputs: physical capital, labor, and land. The "residual" puzzle in growth accounting was solved by Schultz (1961a) and others, who introduced human capital into the aggregate production function.

One way of analyzing the complex links between education and development is illustrated in figure 1. The direct relationship depicted by arrow 4—from school to the labor market—is known as the "external efficiency of education" and has received most attention in the literature, mainly from economists. The triangular path (arrows 1, 3, and 6) from family background to schooling and learning outcomes is known as the

Figure 1
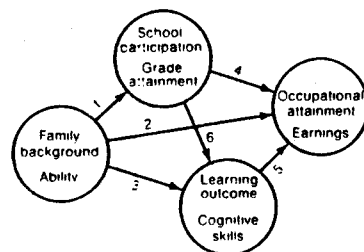
"internal efficiency of education" and has been studied mainly by sociologists and psychologists. In recent years, the availability of longitudinal data sets has permitted some attempts to estimate the full model.

The first section in this article presents some of the principal findings on the role of education in development that have been generated in the past twenty years. The following section deals with a series of debates that have appeared in the literature. The final section attempts to draw some policy implications for educational priorities in developing countries.

The Evidence

This review is restricted to the effects of education most directly related to a common notion of economic development. One is efficiency in resource utilization, leading to higher income; another is more equitable distribution of such income.

Labor Market Outcomes

There is widespread evidence that an individual's earnings increase with each extra year of schooling. The explanation of human capital theory is that education makes the individual more productive, not only in the market place but also in the household. As Welch (1970) and Schultz (1975) have put it, education has a beneficial allocative effect or helps the individual to deal with disequilibrium situations.

Figure 2

Earnings/productivity

Age/experience

The empirical core of the human capital school lies in the crossover shown in figure 2—the tradeoff between a low level of education and earnings today versus more education and earnings tomorrow. Such a relationship has been documented in practically every country that has data on age-earning profiles by education. (See the appendix for examples from the latest Brazilian census.)

Proper discounting of the costs and benefits associated with educational investment (the minus and plus areas in figure 2) leads to estimates of its profitability from both the private and social point of view. Like the rate of return to any other project, the return to educational investment is the discount rate that sets the net present value of the net stream of benefits equal to zero. In a state subsidized system the cost of education to the individual is the earnings forgone while in school. From a social viewpoint, however, the cost of education must include all resources used to provide education (for example, teachers' salaries and the use of classrooms).
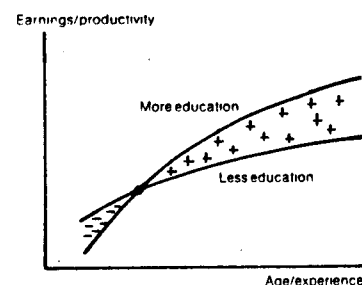
Estimates of the returns to education are now available for over sixty countries. Table 1 gives a regional summary and raises several noteworthy points.

- The social returns to education in developing countries are at least as high as any reasonable measure of the opportunity cost of capital or a social discount rate. In other words, investment in people may be more conducive to economic growth than investment in machines.
- Rates of return are highest in primary education, followed by secondary and then university levels. For primary education, unit costs are small relative to the extra lifetime income or productivity associated with literacy. For university education, the opposite is true.
- The same diminishing returns apply across countries: the more developed the country, the lower the returns to education at all levels. The high returns to education in low-income countries must be attributed to their relative scarcity of human capital.
- Private returns are higher than social returns at all levels—a result of the public subsidization of education in most countries. The discrepancy between private and social returns is greatest at university level—which raises issues of equity as well as of how educational expansion should be financed.

Other studies have estimated rates of return by field of study and by sex. Table 2 shows that technical education and agronomy are associated with lower returns than the more general subjects—a counterintuitive result that is again due to the relatively high unit cost of technical education (Psacharopoulos 1987a). And table 3 shows that the rate of return is higher on women's education than on men's. Although in all societies the absolute earnings of men are higher, the opportunity cost of study for women is often lower than for men, and

Table 1. The Returns to Investment in Education by Country Group and Level of Schooling
(percent)

Country group	Social return			Private return		
	Primary	Secondary	Higher	Primary	Secondary	Higher
Africa	26	17	13	45	26	32
Asia	27	15	13	31	15	18
Latin America	26	18	16	32	23	23
Intermediate[a]	13	10	8	17	13	13
Industrial	—	11	9	—	12	12

—Not available because of lack of a control group of illiterates.
a. Refers to South European and Middle East countries. Figures are averages for fifty-eight countries and mainly refer to the late 1970s.
Source: Psacharopoulos 1985, p. 586.

furthermore women's education allows them to participate in the labor force in the first place.

Growth Accounting

If expenditure on education produces a high social rate of return, macroeconomic analyses should pick up on the link between the expansion of education and economic growth. This issue has been extensively studied, following the pioneer work of Schultz (1961b) and Denison (1967). Their approach, called "growth accounting," breaks down a country's economic growth into various contributory factors, such as investment in physical capital, growth in the workforce, and investments in human capital. (The growth in agricultural land has not been found to be a major source of growth.) As table 4 shows, such macro evidence bears out the microeconomic links between education and earnings. The same relationships have been studied by economic historians, who relate the literacy level of a country to cycles of growth. For example, Saxonhouse (1977), in a study of the Japanese cotton spinning

Table 2. The Social Returns to Education by Level and Field of Study
(percent)

Educational level	Field of study	Rate of return
Secondary school curriculum	General, academic	16
	Technical, vocational	12
University faculty	Law, economics, social sciences	12
	Engineering	12
	Agronomy	8

Note: Rate of return figures are averages for seven countries and are based on data mainly from 1980.
Source: Based on Psacharopoulos 1985, tables 6 and 7.

Table 3. The Returns to Education by Sex
(percent)

Sex	Rate of return
Males	11
Females	15

Note: Figures are mainly private rates and refer to the coefficient of the average year of schooling estimated by means of Mincer's (1974) semilogarithmic earnings function in sixteen countries during the late 1970s.
Source: Based on Psacharopoulos 1985, p. 588.

Table 4. *The Contribution of Education to Economic Growth by Region*

Region	Percentage of growth rate explained by education
Africa	17.2
Asia	11.1
Latin America	5.1
North America and Europe	8.6

Note: Figures are simple country averages within regions and mostly refer to economic growth in the 1950s and 1960s.
Source: Based on Psacharopoulos 1984b, table 8-2.

industry from 1891 to 1935, found that education, among other factors, had a large and significant impact on productivity growth. Easterlin (1981) examined data for twenty-five of the world's largest countries and concluded that the spread of technology depended on the learning potentials and motivation that were linked to the development of formal schooling: in other words, that the most likely causal link is from education to economic growth, not the other way around.

Income Distribution

Since education has such a strong bearing on individual earnings, it must also affect the way income is distributed. The net effect of the expansion of schooling has been a reduction in the dispersion of earnings and hence a more equal income distribution. (The appendix gives an exemplary income distribution by education in Brazil.)

This equitable effect, however, strongly depends on which level of schooling is expanded. The equity impact is highest for basic education, since the low earnings of otherwise illiterate workers are raised nearer to the overall mean. But if university education is expanded (and especially postgraduate education), the equity effect may be negative, in the sense that a group of workers with earnings above the mean are raised even further away from it. Taking Mexico as an example, Marin and Psacharopoulos (1976) report that providing primary education to 10 percent of those without it would make income distribution more equal by nearly 5 percent compared with the present level of an inequality index. Giving higher education to 5 percent of those with secondary education, however, would worsen the inequality index by 2 percent. Since most university students come from the higher-income groups in any society, state subsidies for their education will boost their future earnings at the expense of the general taxpayers, who are less

likely to enroll their children in higher education. Table 5 shows that in four countries the children of the upper-income groups received the bulk of the higher education subsidy.

The Debates
The views of the human capital school have long been the subject of considerable controversy in the literature. The same positive correlation between education and earnings could also be predicted by several other theories, which, if valid, would weaken the "education-for-development" proposition. Especially vulnerable in this respect has been the link between earnings and productivity. For if the higher earnings associated with more schooling do not have a productivity counterpart, the social payoff of investment in schooling would vanish.

Screening

Among the many arguments that earnings may not reflect productivity, perhaps the most elaborate is the one known as the "screening hypothesis" (Arrow 1973). Employers prefer, and pay higher salaries to, the more educated because the employers use schooling as a proxy for various unobserved characteristics that such employees will in fact be more productive. To the extent that those with greater natural ability receive more years of schooling, the higher earnings of the more educated are due to their greater genetic ability rather than to their education. According to some estimates, the social rate of return to investment in schooling should be halved when screening is taken into account (Taubman and Wales 1973).

Although this theory sounds plausible, many attempts to test it have failed to produce any support for it. Early evidence by Griliches (1970) has shown that the inclusion of measured ability in an earnings function does not diminish the importance of schooling in determining earnings (see also Layard and Psacharopoulos 1974). The same

Table 5. *The Share of Higher Education Subsidies to Different Income Groups in Selected Countries*
(percent)

Country	Survey year	Income group		
		Lower	Middle	Upper
Chile	1983	15	24	61
Colombia	1974	6	35	60
Indonesia	1978	7	10	83
Malaysia	1974	10	38	51

Source: World Bank 1986, p. 61.

result was repeated in two recent studies of Kenya and Tanzania (Boissiere, Knight, and Sabot 1985). And where the outcome of education is measured directly by the value of extra output (by means of an agricultural production function) rather than by extra earnings, it has been found that the effect of schooling is substantial. According to a review by Jamison and Lau (1982), four years of education raises agricultural productivity by 9 percent over what it would be with no education. Such a benefit, when it is combined with the low cost of providing primary education, confirms the relatively high rate of return to primary education.

Public versus Private Sector

Another way of shadow pricing education is by observing the earnings of those employed in the competitive parts of the economy (for example, the private sector or self-employment). Private employers cannot keep on paying a wage much higher or lower than what a particular employee contributes to production: if they do, they will either incur unsustainable losses or the employee will leave. Table 6 shows that the returns to investment in education, as estimated for those employed in the competitive sectors, are higher than those for the economy as a whole. The reason for such finding is that civil service pay scales have a tendency to narrow the earnings dispersion, especially by paying above their marginal product those with the lowest level of schooling (Psacharopoulos 1983). Furthermore, in self-employment, where no screening takes place, standardized labor earnings for other inputs used by enterprises in the informal sector must reflect the value of education in production.

Segmentation

Another popular debate in the economics of education comes under the heading of labor market segmentation, or duality (Gordon 1972).

Table 6. *The Private Returns to Education by Sector of Economic Activity*
(percent)

Economic sector	Rate of return
Private	13
Public	10

Note: The figures are averages for eleven countries, estimated by the Mincerian earnings function and refer mainly to the late 1970s.
Source: Based on Psacharopoulos 1985, table 4.

The starting point is the proposition that there are good jobs and bad jobs. Whereas education helps those in good jobs to achieve high pay, it does not do so for those who are locked in bad jobs with few promotion prospects.

Empirical tests of this descriptive proposition have suffered from a statistical artifact most lucidly expressed by Cain (1976). By fitting earnings functions within low-pay bad jobs and high-pay good jobs, one necessarily truncates the income-dependent variable of the latter group and finds a lower effect of education on earnings.

In fact, the labor market is a continuum, with no clear line separating the alleged segments. In addition, many workers, by acquiring more education, have been able to cross over to the higher segment—something they could not otherwise have achieved. The issue is mobility, which can be examined only with longitudinal data—whereas most attempts to test for labor market duality have been based on cross-sectional data. But Chau tests on the difference between two sets of coefficients on an earnings function fitted to a split cross-sectional sample (usually by occupation) say nothing about how education may assist an otherwise low-paid worker to move up to the other group (Psacharopoulos 1978; Corbo and Stelcner 1983).

Declining Returns over Time

In the mid-1970s, some people expressed fears that the world may be overeducated, in the sense that schooling had expanded beyond a normative optimum (Freeman 1976, Dore 1976). Such fears continue to be voiced today regarding educational expansion in developing countries. Whereas education was a socially profitable investment in the 1960s, it might not be in the 1990s.

This issue is settled rather easily by looking at the rare instances where the returns to education have been estimated within a country for more than one year. As shown in table 7, the profitability of investment in education, like that for any other type of investment, declines over time as educational expansion takes place. However, the decline is far from drastic. It took ten years for the rate of return in Brazil to drop from 16.5 percent to 14.5 percent. During the same period the mean years of schooling completed was raised from 3.9 years to 5.7 years. Building the stock of human capital by means of annual flows of graduates is a very slow process (Psacharopoulos and Arriagada 1986).

The interaction between shifts in the supply and demand for educated labor is what Tinbergen (1975) described as the race between education and technology. Whereas school expansion increases the supply of graduates and thus tends to lower the rate of return, technological demand for more sophisticated skills keeps pace with the

Table 7. The Private Returns to Education at Two Points in Time in Selected Countries
(percent)

Country	Survey year	Rate of return
Brazil	1970	16.5
	1980	14.5
Colombia	1965	17.3
	1978	14.4

Source: Brazil, from Psacharopoulos 1985, table 4; Colombia, from Mohan 1981, p. 40.

Table 8. The Changing Composition of the Labor Force in Selected Countries

Country	Year	Percentage of the labor force		Mean years of schooling
		With no education	With higher education	
Brazil	1960	48.2	0.5	2.4
	1980	24.7	5.9	5.6
Chile	1969	18.6	2.3	5.9
	1981	4.1	8.3	8.1

Source: Psacharopoulos and Arriagada 1986, p. 572.

increased supply. The net result of such a race is an elastic "reduced form" set of intersections of the supply and demand for educated labor.

Supply shifts of educated labor have been impressive in the years since World War II, and especially during the 1960s in developing countries. Table 8 shows, as an example, the changing composition of the labor force in two Latin American countries.

Educated Unemployment

Fears are often expressed that the expansion of education produces unemployed graduates. It is true that the transition from school to work has been exacerbated in recent years, mainly because of sluggish economic growth. Nonetheless, the "product" of education will last fifty years—the working time of the individual concerned. There is no evidence that any person who is willing to work remains idle for fifty, forty, or even five years. The incidence of unemployment is a sharply declining function of age or time since graduation; virtually everyone finds a niche within a matter of weeks or months (Psacharopoulos and Sanyal 1981). In one branch of economics, at least, the period

between graduation and landing a job is interpreted as waiting time, in the sense that an "unemployed" person makes a voluntary decision to remain out of work so that he or she can search for a better job or salary rather than accept the first available (Stigler 1962). In Indonesia, for example, it was found that job search among secondary school graduates yields a 21 percent rate of return (Clark 1983).

Radical Interpretations

The Marxist school of radical economics puts a completely different interpretation on the education-earnings relationship. It sees education as a means by which the dominant social class perpetuates the status quo from generation to generation (Bowles 1972). By providing schooling to its offspring, the income earning power and economic dominance of that class will be sustained. Schools also enhance certain qualities of docility that are rewarded by employers; they do not impart productivity-boosting skills (Bowles and Gintis 1975).

Of course, more educated parents will seek to give their children at least as much education as they themselves have received. This is a global phenomenon, widely studied by sociologists (for example, see Jencks and others 1972). But this does not necessarily deny the productivity value of education—it is more an issue of how education was acquired in the first place and by whom. Research on social mobility has demonstrated that education helps many children of modest social origins to reach the highest occupational classes and income groups (Anderson 1987).

Quality versus Quantity

Most of the evidence on the developmental effects of education refers to the extensive margin, that is, to the number of years of schooling of the labor force. Evidence on the intensive margin—the quality of education provided—is scarce. (For one attempt, see Behrman and Birdsall 1983). The reason is that, in developing countries, longitudinal data sets that follow the student from school to adult life and measure economic performance are rare. Furthermore educational quality means different things to different people. First, there is the traditional input definition, by which higher expenditure per pupil or a lower repetition rate are indicators of good quality. But throwing money at schools does not necessarily mean that such money will be used efficiently, and automatically promoting everyone in a class does not mean that graduates will (at least) have been made literate. Second, there is the output definition of educational quality, based on the students' learning achievement. But because so many factors other than schooling (for example, prior cognitive knowledge and family

background) correlate with cognitive achievement in a cross section, it is difficult to isolate the particular effects of education. However, extensive work with the so-called educational production functions has resulted in the conclusion that, although family factors are associated with achievement, specific educational inputs, like the availability of textbooks, do have a net effect in raising achievement (Heyneman and Loxley 1983).

In education, as in any other field, universal policy prescriptions simply do not exist. The strategy and tactics of education depend upon the initial conditions in a particular country, which means that whereas policy A is suitable for country X, policy B may be more suitable for country Y. Given this qualification, the accumulated evidence in the economics of education in the past thirty years permits some broad policy generalizations. The list which follows is conservative, in the sense that, unless the initial conditions in a given country dictate otherwise, the propositions may be applicable to a large number of countries.

Educational Strategies

Emphasis on Primary Education

For the poorest countries, perhaps the safest strategy is to increase primary education coverage for children age six to fourteen. Such investment has the highest social rate of return, and unless a population is literate, other (physical) investment projects may fail (Mingat and Tan 1987). In addition to direct economic returns, primary education is associated with larger externalities than any other social investment: suffice it to mention the creation of a more informed electorate. Haveman and Wolfe (1984) have identified many nonmarket benefits of education, including better decisions around the home, better sanitation, more leisure time, more efficient consumption, and even better choice of a marital partner. When such effects are priced, the standard estimates may capture only half of the total value of schooling.

Emphasis on General Skills at the Secondary Level

As development takes place and primary education becomes almost universal, the next frontier for educational policy is secondary schools. Although some countries were tempted to vocationalize such schools in order to make them relevant to the world of work, the results have not always matched expectations. For example, in a recent evaluation of two systems of diversified secondary education (Colombia and Tanzania), most of those who studied agricultural or industrial subjects were found, one to three years after leaving school,

in jobs such as office clerk, which were unrelated to their training. Their activities did not differ from those of a control group of general education graduates (Psacharopoulos and Loxley 1985).

Such evidence, coupled with the high unit cost of vocationalizing the curriculum, favors the more conservative policy of emphasizing general skills—like science and mathematics—in secondary education. The unit cost of teaching such subjects is relatively low, and the graduates are flexible enough to fit into a variety of occupations or go on to study in a variety of fields.

Emphasis on Employment-Based Vocational Training

The urge to modernize and industrialize has led many countries to emphasize the creation of technical and vocational skills in the labor force. Such emphasis is fine, although it raises the question of where vocational training should take place. The evidence suggests that employment-based training has an advantage over the same type of training done in formal schools. Latin American countries have relied extensively on employer-financed training in institutions like SENA in Colombia, SENATI in Peru, and SENAI in Brazil. A recent evaluation in Colombia has revealed that the social rate of return to investment in SENA courses is 14 percent, well above that from investment in formal secondary technical education. And the profitability of on-the-job training was found to increase with the years of general education a worker has (Jimenez, Kugler, and Horn 1986).

Employers know more about the demand for labor than the formal school system does, and they are better placed to follow technological developments in a variety of occupations. And the costs of on-the-job training are usually shared between the employer and the employee, whereas school-based training is typically financed by the taxpayer.

Of course, this does not mean that all vocational institutions would disappear. Proprietary schools offering commercial or industrial subjects would certainly remain; people enroll in them voluntarily, are willing to pay for their courses, and thereby help to ensure the relevance of what they offer. These qualities give them a considerable edge over public vocational schools, which are usually regarded as an inadequate alternative to academic institutions.

Emphasis on Cost Recovery in Higher Education

At the highest level of education, cost recovery is the most promising policy for both efficiency and equity reasons. Too much of a typical education budget is devoted to the university level, which has the lowest rate of return, and a disproportionate number of students come from the more affluent parts of society (World Bank 1986).

Some sons and daughters of poor farmers make it to the university, but they are the exceptions that prove the rule. Yet attendance at the university is typically free, and students may even receive a cash allowance. If students pay at least part of the cost of their education, they are more likely to make better choices on whether to enroll and what to study. For the talented poor, selective scholarships or loans can be provided (Mingat and Tan 1986).

Along with cost recovery, universities could adopt more traditional efficiency measures, such as the consolidation of dispersed campuses into larger units. Economies of scale apply as much to university campuses as to industrial plants. The average cost per student declines sharply once enrollment exceeds 500 (Psacharopoulos 1982).

Emphasis on School Quality

There is no point in enrolling every six- to fourteen-year-old in school if many who leave school at fifteen do not know how to read and write. International comparisons of reading, mathematics, and science show that students in developing countries achieve only a fraction of what their peers manage in industrial countries (Heyneman and Loxley 1983).

Money alone does not improve the quality of education (Hanushek 1986). It needs to be concentrated on buying those inputs that are cost-effective in raising the level of student achievement. One such quality booster is the availability of textbooks, along, of course, with teachers qualified to use them (Lockheed, Vail, and Fuller 1987). In parallel, a system of examinations will allow the authorities to monitor who learns what and to take corrective measures if, say, elementary reading and arithmetic standards are dropping.

Deemphasis on Planning Models

Since the early days of educational policy, it has been popular for countries to attempt to plan their educational systems by means of formal models. The most widely used model has been the one known as manpower forecasting, based on a set of fixed relations between the anticipated growth in output and the educational or skill requirements to produce such output (Harbison and Myers 1964). For example, if the historical elasticity of the growth in higher education enrollment and GDP growth is equal to 1, and a country's twenty-year plan anticipated GDP growth of 7 percent a year, then university enrollments should also grow by 7 percent a year. The epitome of such models is found in the Mediterranean Regional Project of the Organisation for Economic Co-operation and Development (OECD), which was also extended to Latin America (see Parnes 1962 and OECD 1967).

In practice, forecasts and outcomes have differed enormously. This is not surprising: technological change and its implications for the demand for skills have been too elusive to predict, and the absence of price and, especially, wage elasticities in the model reduced it to a mechanical application with no practical interest. (For a critique see Psacharopoulos 1984a.) The trend is therefore away from such formal models. They are being replaced by a recognition that what matters is the individual demand for education by students and their families responding to wages and other market signals.

Emphasis on Analytical Work Specific to Countries

Universal policy prescriptions do not exist, but the general principles outlined in this article can be fine-tuned to the conditions in each country. It may be that, although in most developing countries primary education should receive priority, in country X it is the secondary level that offers a higher rate of return. Or it may be in country Y that university faculty should be expanded.

Once a country has decided that, for example, primary education is a priority, it faces a series of options on how to go about increasing its supply. First, how much primary education to provide: four years, five years or perhaps, nine years? The answer will depend on how long is needed to instill literacy in the students. Four years combined with the provision of a qualified teacher and a textbook for each student may achieve more than eight years of education with an untrained teacher and only one textbook to a class. Then there is the question on how to attract students. It is well known that simply building schools in a rural area does not ensure that children will enroll in them. Perhaps a subsidy, say in the form of free lunches, would offset some of the opportunity cost of child labor and thus make parents willing to release them from agricultural activities.
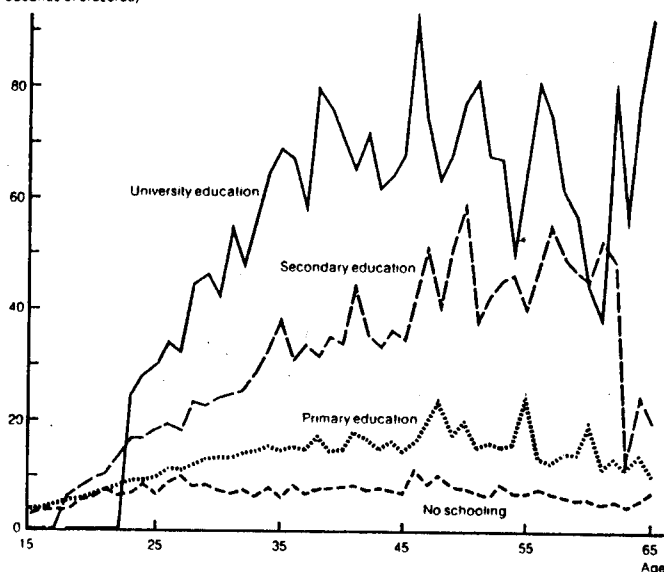
Such issues need to be studied carefully, which in turn requires a critical mass of social scientists to document and monitor relationships in the system, so that the most appropriate educational policy is adopted. However, few Ministries of Education have analytical units linked to the decisionmaking process. Efforts to develop them may be one of the best preliminary investments available.

Concluding Comment

There are many strategies for development, each surrounded with controversy. On the issue of human versus physical capital investment, the classic examples in the early literature were India and Japan (Schultz 1961b). The crash investment in steel mills in India was not accompanied by sustained growth, whereas Japan's emphasis on education since the Meiji set the foundation for its economic miracle.

Of course, it is not easy to establish cause and effect in development economies—too many factors change at the same time. Yet this review of the evidence provides grounds for confidence that investment in education is a major contributor to development.

Appendix: Education and Income in Brazil

Monthly earnings
(thousands of cruzeiros)

Earnings category in multiples of minimum wage	Mean years of schooling	Mean earnings (cruzeros a month)	Frequency (percent)
Below 1/4	2.8	828	0.8
1/4-3/4	3.1	2,401	7.4
3/4-1	3.6	3,848	10.4
1-2	4.1	6,143	32.8
2-3	4.9	10,326	17.0
3-5	6.1	16,518	15.5
5-10	8.7	29,870	9.9
10-15	10.9	51,543	3.2
15-20	12.2	73,595	1.2
20 and above	13.0	149,785	1.8
All earnings categories	4.3	15,105	100.0

Note: Data for the table and figure are based on the public use tapes of the 1980 Brazilian Census. Distribution refers to urban males.

Source: Psacharopoulos 1987b.

Abstract

The article reviews the evidence on the role of education in economic development, with emphasis on issues that have appeared in the literature in the past two decades: the contribution of education to economic growth, the screening hypothesis, the segmentation of the labor market, the return to investment in schooling, and the effects of education on unemployment and income distribution. It concludes with an optimistic assessment of the contribution of educational investment to the development process, especially when such investment is targeted to primary schooling, general education, and improvements in the quality of instruction and when it is accompanied by cost-recovery at the higher levels of education.

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